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# IOWA DEPARTMENT OF TRANSPORTATION

To Office Bridges and Structures Date December 30, 2004

Attention All Employees Ref No. 521.1

From Gary Novey

Office Bridges and Structures

Subject Method's Memo No. 95 (Deck Overlays on New Construction)

Although the office policy for typical bridge decks is to use a single course, 8-inch (200 mm) thick concrete deck with a ½-inch (13-mm) integral wearing surface and dead load for a future wearing surface, that policy does not apply for all bridges. For special designs, the designer may consider a two-course deck. The two-course deck requires approval of the Chief Structural Engineer or the Assistant Bridge Engineer.

The two-course deck shall be designed and constructed according to the following policies.

1. No load shall be included in the design for a future wearing surface. At such time that the wearing surface no longer is serviceable, the entire upper course of the deck will be removed and replaced without adding load to the structure.
2. The upper course of the deck shall be two inches (50 mm) thick.
3. The upper course shall not be considered as composite with floor beams or girders.
4. The concrete finish on the lower course shall be according to plan note. See Attachment A.
5. The lower, structural course of the deck shall be at least 8 inches (200 mm) thick, which shall be the design thickness. Thicknesses greater than 8 inches (200 mm) shall be used as required for relatively long deck spans.
6. In the lower course, cover above the top mat of reinforcement shall be 1.0 inch (38 mm).
7. Where appropriate shear connection is provided (positive bending regions), the lower, structural course may be considered composite with floor beams or girders.

If the bridge with the two-course deck has a sidewalk with no overlay, two additional issues need to be addressed.

1. Cover of 1.0 inch (38 mm) will not be adequate in the sidewalk area or the deck overhang. Separate transverse bars in the sidewalk area need to be placed in order to achieve 2.5 inch (65 mm) cover, as for single course decks.
2. Allowance for a future wearing surface in the sidewalk area needs to be included in the long-term dead load (DL2).

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Attachment A

PLAN NOTE: Preparation of Surface for Surfacing (Two-Course Deck)

THE TOP SURFACE OF CONCRETE DECK SHALL BE INTENTIONALLY ROUGHENED OR RAKED TO A MINIMUM DEPTH OF 6 MM (1/4”). THE ROUGHENING OF THE DECK SHALL BE DONE WITH A MECHANICAL DEVICE SUCH AS WIRE BROOM OR TINING RAKE. TINING CAN BE TRANSVERSE OR LONGITUDINAL. TEXTURE RAKE TINE SPACING SHALL BE EQUAL SPACES OF 1 ½ INCH OR UNEQUAL SPACES IN ACCORDANCE WITH ARTICLE 2412.06 OF THE STANDARD SPECIFICATIONS.

THIS OPERATION SHALL BE DONE AT SUCH TIME AND MANNER THAT THE DESIRED SURFACE TEXTURE WILL BE ACHIEVED WHILE MINIMIZING DISPLACEMENT OF THE LARGER AGGREGATE PARTICLES AND BEFORE THE SURFACE PERMANENTLY SETS. THIS OPERATION SHALL NOT DELAY THE PLACEMENT OF WET BURLAP WITHIN THE ALLOTTED TIME AS SPECIFIED BY THE APPROPRIATE SPECIFICATIONS.

ADDITIONAL REQUIREMENTS AS SPECIFIED IN SECTION 2413.04 OF THE STANDARD SPECIFICATIONS SHALL APPLY.